Production and Use of Dopaminergic Cells to Treat Dopaminergic Deficiencies

Abstract

Differentiated neuronal cells suitable for transplantation in individuals with a dopamine deficiency are derived from progenitor cells. The progenitor cells are treated with at least one inducing agent such as retinoic acid for a time period sufficient to optimize expression of tyrosine hydroxylase. The cells intended for transplantation are optionally treated with a lithium salt to enhance bcl-2 production and survival. Optionally, the progenitor cells are co-cultured with Sertoli cells, bone marrow stem cells, or a combination thereof. The transplantation-ready cells are isolated and harvested. The resulting neuronal cells are purified and have a phenotype optimized to treat a dopaminergic deficiency, such as Parkinson's Disease. Optionally the neuronal cells can be implanted with Sertoli cells, bone marrow stem cells or a combination thereof.